

RADIATION HARDENED NPN POWER SILICON SWITCHING TRANSISTOR

Qualified per MIL-PRF-19500/613

DEVICES

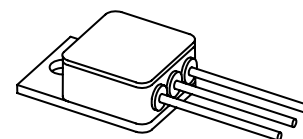
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LEVELS

JANSM – 3K Rads (Si)
JANSJ – 10K Rads (Si)
JANSP – 30K Rads (Si)
JANSL – 50K Rads (Si)
JANSR – 100K Rads (Si)
JANSF – 300K Rads (Si)

ABSOLUTE MAXIMUM RATINGS ($T_C = +25^\circ\text{C}$ unless otherwise noted)

Parameters / Test Conditions	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	80	Vdc
Collector-Base Voltage	V_{CBO}	100	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector Current	I_C	5.0	Adc
Total Power Dissipation @ $T_A = +25^\circ\text{C}$ ⁽¹⁾ @ $T_C = +25^\circ\text{C}$ ⁽²⁾	P_T	4.0 58	W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	$^\circ\text{C}$
Thermal Resistance, Junction-to Case	$R_{\theta JC}$	3	$^\circ\text{C/W}$



TO-254AA

- 1) Derate linearly 22.8mW/ $^\circ\text{C}$ for $T_A > 25^\circ\text{C}$
- 2) Derate linearly 331mW/ $^\circ\text{C}$ for $T_C > 25^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A = +25^\circ\text{C}$, unless otherwise noted)

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage $I_C = 100\text{mA}$	$V_{(BR)CEO}$	80		Vdc
Collector-Emitter Cutoff Current $V_{CE} = 60\text{Vdc}, V_{BE} = 0\text{Vdc}$ $V_{CE} = 100\text{Vdc}, V_{BE} = 0\text{Vdc}$	I_{CES1} I_{CES2}		1.0 1.0	μAdc mAdc
Collector-Emitter Cutoff Current $V_{CE} = 40\text{Vdc}, I_B = 0$	I_{CEO}		50	μAdc
Emitter-Base Cutoff Current $V_{EB} = 4.0\text{Vdc}$ $V_{EB} = 5.5\text{Vdc}$	I_{EBO1} I_{EBO2}		1.0 1.0	μAdc mAdc

PIN 1 = BASE
PIN 2 = COLLECTOR
PIN 3 = EMITTER

SEE FIGURE 1



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TECHNICAL DATA SHEET

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ELECTRICAL CHARACTERISTICS ($T_A = +25^\circ\text{C}$, unless otherwise noted) (CONT.)

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS ⁽³⁾				
Forward-Current Transfer Ratio $I_C = 0.05\text{A dc}$, $V_{CE} = 5.0\text{V dc}$ $I_C = 2.5\text{A dc}$, $V_{CE} = 5.0\text{V dc}$ $I_C = 5.0\text{A dc}$, $V_{CE} = 5.0\text{V dc}$	h_{FE1} h_{FE2} h_{FE3}	50 70 40	--- 200 ---	
Base-Emitter Non-Saturated Voltage $V_{CE} = 5.0\text{V dc}$, $I_C = 2.5\text{A dc}$	V_{BE}		1.45	Vdc
Base-Emitter Saturation Voltage $I_C = 2.5\text{A dc}$, $I_B = 0.25\text{A dc}$ $I_C = 5.0\text{A dc}$, $I_B = 0.5\text{A dc}$	$V_{BE(sat)1}$ $V_{BE(sat)2}$		1.45 2.2	Vdc
Collector-Emitter Saturation Voltage $I_C = 2.5\text{A dc}$, $I_B = 0.25\text{A dc}$ $I_C = 5.0\text{A dc}$, $I_B = 0.5\text{A dc}$	$V_{CE(sat)1}$ $V_{CE(sat)2}$		0.75 1.5	Vdc

DYNAMIC CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Common Emitter Small Signal, Short Circuit Forward Current Transfer Ratio $V_{CE} = 5\text{V dc}$, $I_C = 100\text{mA dc}$, $f = 1\text{kHz}$	h_{fe}	50		
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 0.5\text{A dc}$, $V_{CE} = 5\text{V dc}$, $f = 10\text{MHz}$	$ h_{fe} $	7.0		
Output Capacitance $V_{CB} = 10\text{V dc}$, $I_E = 0$, $100\text{kHz} \leq f \leq 1.0\text{MHz}$	C_{obo}		250	pF

SAFE OPERATING AREA

DC Tests

$T_C = +25^\circ\text{C}$, 1 Cycle, $t = 1\text{s}$

Test 1

$V_{CE} = 12\text{V dc}$, $I_C = 5.0\text{A dc}$

Test 2

$V_{CE} = 32\text{V dc}$, $I_C = 1.5\text{A dc}$

Test 3

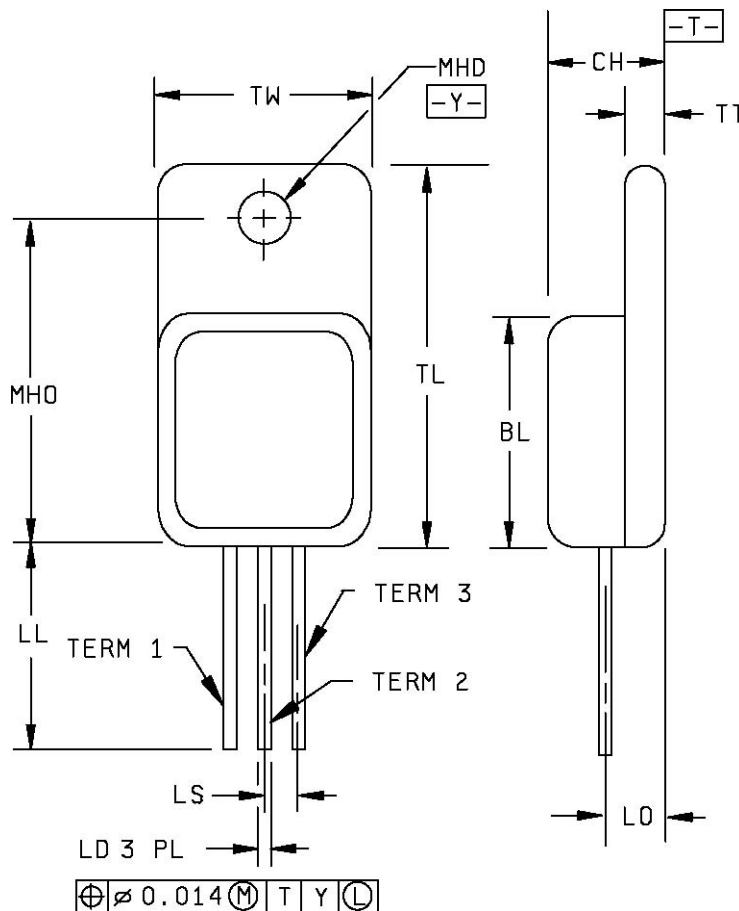
$V_{CE} = 80\text{V dc}$, $I_C = 100\text{mA dc}$

(3) Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$

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Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
BL	.535	.545	13.59	13.84
CH	.249	.260	6.32	6.60
LD	.035	.045	0.89	1.14
LL	.510	.570	12.95	14.48
LO	.150 BSC		3.81 BSC	
LS	.150 BSC		3.81 BSC	
MHD	.139	.149	3.53	3.78
MHO	.665	.685	16.89	17.40
TL	.790	.800	20.07	20.32
TT	.040	.050	1.02	1.27
TW	.535	.545	13.59	13.84
Term 1	Base			
Term 2	Collector			
Term 3	Emitter			



NOTES:

1. Dimensions are in inches.
- * 2. Millimeters are given for general information only.
3. All terminals are isolated from case.
4. In accordance with ASME Y14.5M, diameters are equivalent to ϕ x symbology

FIGURE 1: PACKAGE DIMENSIONS